

plained residual.¹⁷ On the other hand, if additional realizations are attributed among income groups in the same proportion as actual 1983 realizations, they account for \$2.3 billion in additional tax payments by the top percentile. Of this amount, an estimated \$0.6 billion is due to the induced effect of lower marginal tax rates.

Wages and Salaries

Table IV.6 shows that wage and salary income per return increased by 30.9 percent for the top percentile between 1980 and 1983, compared to an increase in wage and salary income per return of 18.8 percent for the entire population and an increase in per-capita personal income of 21.9 percent. The average marginal tax rate applied to wage and salary income of the top percentile in 1983 was slightly more than 10 percent less than the corresponding rate on wage and salary income under indexed 1980 law. The difference in the marginal tax rate on wages and salaries for the top percentile was about the same as the difference for the population as a whole.¹⁸ Because the top percentile confronts higher marginal tax rates, however, the same percentage decline in marginal tax rates results in a greater percentage increase in net after-tax wage and salary income, per dollar of pre-tax wages, for the top percentile than for taxpayers generally. Marginal after-tax wages were slightly over 10 percent higher under 1983 law for the top percentile, compared to about 4 percent higher for taxpayers generally.

The relatively larger increase in after-tax wages for taxpayers in the top percentile of the income distribution is consistent with the hypothesis that the increase in wage and salary income for this group was at least partially a behavioral response to the tax changes. Economic theory, however, does not unambiguously predict that workers will respond to an increase in after-tax wages by increasing their hours of work. An increase in wages creates two offsetting

17. The induced revenue from lower tax rates shown in the table is the additional net revenue from higher capital gains realizations in the top percentile, at the 1983 marginal tax rate on capital gains applied to those taxpayers. It does not represent the net revenue effect of lowering the capital gains tax rate, because it does not include the loss in revenue from lower tax rates on gains that would have been realized under 1980 law.

18. This occurred despite the greater percentage reduction in the top statutory rate (from 70 percent to 50 percent) than in other rates because many taxpayers in the highest income group benefited from the maximum tax on personal service income (50 percent) in tax years before 1981.

TABLE IV.6. GROWTH IN WAGES AND SALARIES AND CHANGES IN
MARGINAL TAX RATES ON WAGES AND SALARIES: 1980-1983

	Expanded Adjusted Gross Income Group					
Total	Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)	
<hr/>						
Wages/Return						
1980 (\$)	14,375	76,265	41,080	27,386	15,648	5,593
1983 (\$)	17,074	99,804	52,230	32,941	17,890	6,289
Growth (\$)	18.8	30.9	27.1	20.3	14.3	12.4
 Marginal Tax Rate on Wages						
1980 (%)	29.0	50.0	42.8	31.4	23.5	15.5
1983 (%)	26.1	44.9	37.5	28.3	21.4	14.3
Change (%)	-10.0	-10.2	-12.4	-9.9	-8.9	-7.7
 Marginal After- Tax Proceeds of Wage Income						
1980 (%)	71.0	50.0	57.2	68.6	76.5	84.5
1983 (%)	73.9	55.1	62.5	71.7	78.6	85.7
Change (%)	4.1	10.2	9.3	4.5	2.8	1.4

effects on the decision of how many hours to work. First, an increase in wages raises the return from working more hours (or increases the cost of leisure time) and hence creates an incentive for workers to work more hours. Second, an increase in wages also raises workers' incomes for a given amount of hours of work. With higher incomes, workers may be inclined to work less as they can afford to spend some of this increase in income on additional leisure time. If this latter effect dominates the former, workers actually may reduce their hours of work in response to an increase in net wages.

A number of econometric studies have attempted to quantify the effect of a change in wages on labor supply.¹⁹ While the estimates from these studies vary a great deal, the typical results are that a change in wage rates has very little impact on the hours worked by prime-age males, but that the hours worked by women, and particular married women, are much more sensitive to changes in wage rates. More specifically, these results suggest that a 10 percent in-

19. For a review of these econometric studies and a discussion of the theoretical issues concerning labor supply see Mark Killingsworth, *Labor Supply* (Cambridge: Cambridge University Press, 1983), particularly pp. 185-201, and Harvey S. Rosen, "Income Taxation and Labor Supply" in Joint Economic Committee, *Special Study on Economic Change*, 96:2 (December 26, 1980), vol. 6.

crease in wages would produce almost no change in the hours worked by men, but would lead to an increase in the hours worked by women by slightly more than 10 percent.

How might the observed changes in wage and salary incomes for the top percentile be reconciled with these econometric estimates? It is possible that much of the response in that percentile was by married women. In addition to the change in after-tax wages because of the rate reductions, the deduction for two-earner couples created a further increase in net after-tax wages for the lower-earning spouse in two earner couples, provided that these earnings were less than \$30,000 per year. In the top percentile, marginal after-tax wages increased by 14 percent for the lower earner in two-earner couples.

However, the data appear not to support this hypothesis. In the upper 1 percent of the income distribution, not only did wage and salary income for married couples grow more slowly than wage and salary income for single filers, but the percentage of the top percentile that was composed of married couples declined slightly from 1980 to 1983.²⁰

This suggests that either existing econometric estimates do not accurately portray the response of very-high-income workers to an increase in net after-tax wages, or that there are other explanations for the growth in wage and salary income in the top percentile. One such factor may have been a decline in hours of work by taxpayers in the lower part of the income distribution because of the change in economic conditions between 1980 and 1983. In 1983, the U.S. economy had still not fully recovered from the 1981-1982 recession. The national unemployment rate averaged 9.6 percent in 1983, compared to 7.1 percent in 1980. A rise in the rate of unemployment increases the percentage of wages and salaries earned by workers in higher-income groups because the incidence of unemployment is generally concentrated among low-wage workers.²¹

Finally the increase in wage and salary income in the top percentile may reflect a change in the form of compensation rather than an increase in hours of work. A reduction in marginal tax rates would reduce the demand by work-

20. It is still possible that the wage and salary income for two-earner married couples grew faster than average but not fast enough to offset the slower growth in earnings among one-earner married couples. Unfortunately, it is not possible to identify from the 1980 data which of the married couples were two-earner couples.

21. If high unemployment resulting from the 1981-1982 recession had been the primary reason for the change in the distribution of wage income, one would expect that relatively slower growth of wages and salaries in the top percentile, compared to other groups, would accompany the decline in unemployment in 1984 and 1985. Detailed tax return data on the distribution of components of income for years after 1983 are not yet available.

ers for tax-deferred or tax-exempt remuneration and hence would increase taxable money wage and salary income.

OTHER SOURCES OF CHANGES IN THE DISTRIBUTION OF INCOME

The previous section has reviewed the potential effects of tax rate changes on two major sources of the shift in the distribution of income toward the top percentile between 1980 and 1983--higher capital gains realizations and higher wages. This section briefly reviews changes in economic conditions and policies, other than those directly associated with changes in tax policy, that might have altered the distribution of income or its components between 1980 and 1983. While these changes probably increased the share of income of upper-income groups, there is no basis for quantifying their effects.

Economic Conditions in 1980 and 1983

The year 1980 was marked by a brief recession, which followed four years of steady expansion. The recession was immediately followed by a rapid, though short, recovery, with both interest rates and inflation increasing. In contrast, the year 1983 was the first full year of the extended recovery that followed the deepest recession trough of the postwar period. The rate of inflation had declined significantly from that experienced in previous years and remained low. Interest rates were high by historical standards, but were gradually declining.

Effects of Unemployment

In 1980, unemployment was 6.1 percent at the beginning of the year, but increased to a peak of 7.5 percent during that year's brief recession. It averaged 7.1 percent for the entire year. The unemployment rate, though declining, was higher throughout 1983 than at any time during 1980. It was 10.4 percent at the beginning the year and 8.5 percent at the end, averaging 9.6 percent for the entire year.

A number of studies have found that recessions increase the income shares of high-income groups. This results largely from increases in unemployment rates and a reduction in labor force participation rates, which are concentrated

among low-wage earners.²² The wage share of GNP rises during a recession, but the distribution of wages shifts toward high-wage groups. In contrast, Mirer's study of the 1970 recession found that families expected to have low incomes (because of occupation or sources of income) improved their relative positions, at least temporarily, even though there was an overall increase in the poverty population.²³

Effects of Interest Rates

On average, interest rates were much higher in 1980 than in 1983. The T-bill rate averaged 11.6 percent in 1980 and 8.6 percent in 1983; the prime rate was 15.3 percent in 1980 and 10.8 percent in 1983. At the same time, reported interest income increased at a more rapid rate than income generally between 1980 and 1983, as did interest deductions.

Although interest rates were generally declining in this period, average interest rates paid and received may have been increasing. One factor causing interest rates received by individuals to rise was the deregulation of financial markets, which was occurring during this period. Deregulation facilitated a shift from passbook savings accounts, with lower-than-market interest rates, to money market funds that allowed low- and moderate-income people with small amounts of wealth to earn market rates. As a result, while interest income increased 37 percent overall, it increased by 59 percent for those in percentiles 51 to 75

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22. For examples of these studies, see Charles M. Beach, "Cyclical Sensitivity of Aggregate Income Inequality," *Review of Economics and Statistics*, vol. 59, no. 1 (February, 1977), pp. 56-66; Rebecca M. Blank and Alan S. Blinder, "Macroeconomics, Income Distribution, and Poverty" (Cambridge, Mass: National Bureau of Economic Research, February 1985), Working Paper No. 1567; Alan S. Blinder and Howard Y. Esaki, "Macroeconomic Activity and Income Distribution in the Postwar United States," *Review of Economics and Statistics*, vol. 60, no. 4 (1978), pp. 604-608; Brian W. Cashell, "Business Cycles: What Happens and Why?", Library of Congress, Congressional Research Service, Report No. 81-20E (February 5, 1981); Edward M. Gramlich and Deborah S. Laren, "How Widespread are Income Losses in a Recession?", in D. Lee Bawden, ed., *The Social Contract Revisited* (Washington, D.C.: The Urban Institute Press, 1984); Robin Hahnel and Howard J. Sherman, "Income Distribution and the Business Cycle: Three Conflicting Hypotheses," *Journal of Economic Issues*, (March 1982), pp. 49-73; and Barry Molefsky, "Recession in 1982: Economic Risks and Prospects," Library of Congress, Congressional Research Service, Report 82-31E (February 22, 1982).
23. See Thad W. Mirer, "The Distributional Impact of the 1970 Recession," *Review of Economics and Statistics*, vol. 55 (July, 1973).

of the income distribution and by 78 percent for those between the 76th to 95th percentiles. One factor contributing to the growth in interest deductions may be that interest rates on new loans were at historically high levels throughout the early 1980s. This could have caused average interest rates on outstanding loans to rise even though interest rates on new loans were declining after 1981.

Effects of Inflation

The rate of inflation declined dramatically between 1980 and 1983. The Consumer Price Index for urban consumers (CPI-U) increased by 12.4 percent in 1980, but only by 3.8 percent in 1983. The effect of inflation on the distribution of pretax income appears to be smaller than the effect of changes in the unemployment rate. One recent study finds that inflation does not significantly shift the distribution of the largest component of taxable income, wages.²⁴ An earlier study found that inflation had only a modest effect on the distribution of income, increasing the shares of middle-income groups and reducing those of the lower- and higher-income groups.²⁵ Thus, the effects of inflation on the pretax income distribution cannot be predicted with any confidence, but are probably much smaller than the effects of unemployment.

In summary, the overall effects of macroeconomic conditions should have been expected to increase the share of pretax income received by upper-income groups, even if there had been no tax policy changes or if there had been tax changes with equal effects throughout the income distribution. The results of previous empirical studies, however, do not provide the basis for a quantitative estimate of how much of the change in the income distribution between 1980 and 1983 can be attributed to short-run macroeconomic conditions.

24. For evidence that inflation hurts upper-income groups relatively more than lower income groups, see Blank and Blinder, "Macroeconomics, Income Distribution and Poverty."

25. See E.C. Budd and D.E. Seiders, "The Impact of Inflation on the Distribution of Income and Wealth," *American Economic Review*, LXI (May 1971), pp. 128-138. The definition of income used by Budd and Seiders is broader than the one used in this paper because it includes types of income not reported on income tax forms (for example, many government transfer payments.)

CONCLUSIONS

This chapter has examined evidence as to the effects of tax policy changes between 1980 and 1983 on the distribution of income and taxes paid, with particular attention to the extent to which behavior induced by changes in tax policy may explain the higher tax share paid by taxpayers in the top percentile of the income distribution.

The data reported in this chapter compare incomes and taxes paid in 1983 to a baseline projection that holds average tax rates and income shares fixed at 1980 levels but assumes that incomes and deductions per return would have grown at the same rate as per capita personal income.²⁶ The difference between projected 1983 taxes using this baseline and actual 1983 taxes is about \$40 billion.

This revenue loss can be disaggregated into "static" and "other" effects, where the static effect represents the loss of tax revenue that would have occurred if the distribution of income and deductions had remained the same. Overall, the total tax reduction was about the same as the "static" reduction. For the top percentile of taxpayers, however, the static tax reduction was \$10 billion, while the overall reduction in taxes paid was slightly over \$3 billion. Changes in the share of income accounted for by the top percentile of returns offset about 60 percent of the "static" reduction in taxes paid for that group. These changes in income shares caused the share of taxes paid by the top percentile of returns to increase from 19.1 percent in 1980 to 20.6 percent in 1983, instead of declining to 18.5 percent, as it would have if the distribution of income had remained unchanged.

A closer look at the data shows that the higher taxable income of the top percentile of returns, compared to the baseline projection, can be attributed to higher capital gains realizations and wages. Tax policy changes improved incentives to realize capital gains and to work for monetary compensation more for the top percentile of returns than for lower-income groups. The relative improvement in incentives for the top group was greater for capital gains than for wages. This suggests that at least some part of the higher capital gains and wages of the top income group could have been the result of a behavioral response to lower tax rates.

26. For this purpose, unchanged tax "policy" is taken to include indexing personal exemptions and the width of rate brackets to the growth in per-capita personal income after 1980.

Econometric analysis of capital gains behavior suggests that lower tax rates explained only about 25 percent of the higher realizations of capital gains in 1983. Other influences, including improved compliance provisions enacted in TEFRA, also played a role in the unusually large increase in capital gains between 1982 and 1983. The increased share of wages and salaries earned by the top income group may be attributed in part to lower tax rates, but the observed increase in wages exceeds the expected changes based on existing econometric estimates of labor supply. Some of the increase in wage and salary income may have resulted from a change in the form of compensation from tax-exempt or tax-deferred compensation to taxable wages and salaries in response to the reduction in tax rates. The increased share of wages in the top percentile also may be attributable to the effects of high unemployment remaining after the 1981-1982 recession, because high unemployment associated with business cycles usually causes a relatively greater decline in earnings of lower-income groups.

The results are consistent with expectations that there would be some revenue-increasing feedback effects from lower marginal tax rates in the top brackets. These effects, however, should not be exaggerated. It does not appear, based on the estimates in this study, that induced effects were large enough to prevent a net revenue loss for taxpayers in the top income groups. Moreover, it is difficult to quantify how much the relatively greater increase in incomes at the top of the distribution can be attributed to behavioral responses to lower tax rates, how much to improvements in compliance provisions, and how much to overall economic changes not directly related to changes in the tax structure.

Induced economic and revenue effects from future tax reform legislation will depend on the exact provisions of any bill, as well as on whether statutory tax rates are lowered. The analysis of historical data in this paper suggests that lower marginal tax rates on wage and salary income and capital gains may not lose as much revenue as would be implied by estimates that do not take account of the induced increases in wages and salaries and capital gains of high-income earners. Over longer periods of time, there may be further economic benefits from improved work and savings incentives and greater productivity. The implications of the data, however, are sufficiently ambiguous to make it unwise, for budget planning purposes, to rely on induced responses to lower marginal tax rates to make tax reform revenue-neutral.

APPENDICES

APPENDIX A

OTHER ANALYSES OF DISTRIBUTIONAL EFFECTS

OF THE 1981 TAX CUTS

A number of authors have addressed the question of the distributional effects of the 1981 tax cuts. This appendix provides a brief chronology of several articles and studies, followed by a comparison of methodology between this study and a similar study performed by Lawrence B. Lindsey.

CHRONOLOGY OF ARTICLES AND STUDIES

April 11, 1984 Editorial, "Tricklenomics," *Wall Street Journal*.

The editorial examines the share of taxes paid by fixed AGI classes in 1981 and 1982 and claims that the cuts in marginal tax rates transferred the tax burden from the poor to the rich by drawing the rich out of tax shelters and channelling more income into taxable investment.

April 22, 1984 John Berry, "Tax Cuts Aren't Working As Promised," *Washington Post*.

Berry refutes early supply-side claims and says that, when adjusted for changes in their share of total income, the tax burden of the group with adjusted gross income (AGI) under \$25,000 went up, not down, in 1982. In addition, Berry notes that income increased significantly at the top end of the income scale because of a surge in stock prices in the latter half of 1982 and a one-time "unlocking" effect on investment assets from the reduction in the maximum capital gains tax rate.

May 7, 1984 Editorial, "The Panic of 1984," *Wall Street Journal*.

The editorial cites statistics from 1981 to 1982 that show that rich people declared more income once tax rates were cut. It is noted that there was a 42 percent increase in revenues collected from people who reported \$1 million or more.

June 11, 1984 Joseph Minarik, "The Tax Shares Boomlet," *Tax Notes*.

Minarik says that there is no basis for claims that the 1981 tax cuts produced the effects claimed by supply-siders. He notes that we should expect growth in the share of the over-\$50,000 AGI group from 1981 to 1982 because of the recession, stock market boom, and inflation.

June 11, 1984 Kenneth Simonson, "Supply Side' Tax Changes: Do They Soak The Rich Or Sock It To The Poor?" *Tax Notes*.

Simonson notes that it is impossible to draw firm conclusions from the data thus far. He also says that the share of taxes paid must be examined by a percentage of returns rather than fixed AGI classes.

June 26, 1984 James Gwartney and Richard Stroup, "The Redistributionist Tax Reduction," *The Wall Street Journal*.

Gwartney and Stroup examine the tax liability of income percentiles and conclude that the share of taxes collected from the rich in 1982 was greater than in 1981.

July 31, 1984 Donald Kiefer, "The 1982 Tax Return Data and Supply-Side Responses to the Tax Cut: Manifestation or Mirage?" Congressional Research Service Report No. 84-702E.

Kiefer says that the tax return data available thus far neither prove nor disprove claims that the 1981 tax cuts induced upper income taxpayers to pay more tax. Kiefer also notes that the published data are not suited to studying the responses of taxpayers because they do not report a comprehensive income measure or observe the same taxpayers from year to year.

August 20, 1984 Michael Schuyler, "The Fairness of the 1981 Tax Reductions," *Tax Notes*.

Schuyler cautions that an evaluation of ERTA should be based on long-run effects of investment, not on 1982 data.

November 19, 1984 Richard Vedder and Philippe Watel, "The Impact of Marginal Income Tax Rate Changes in the United States, 1954-1982," *Tax Notes*.

Vedder and Watel claim that the rich (those with AGI over \$100,000) paid more taxes in 1982 than in 1981 in both relative and absolute terms because they responded to tax incentives.

March 25, 1985 Richard Vedder and Lowell Gallaway, "The Changing Burden of the Federal Individual Income Tax, 1981-1983," *Tax Notes*.

Vedder and Gallaway conclude that upper-income taxpayers paid more taxes in both a relative and absolute sense in 1983 than in 1981. At the same time, the tax burden of lower-income taxpayers decreased. They claim that the 1981 tax cuts stimulated significant increases in "business entrepreneurship" as upper-income taxpayers responded to the incentives provided by lower tax rates.

April 15, 1985 Albert J. Davis, "Income Tax Shares and the Supply Side: A Comment on Vedder and Gallaway," *Tax Notes*.

Davis notes that 1981 is an exceptional year in which high-income individuals shouldered less of the tax burden than in previous years; the share of taxes paid by the rich did not change very much when 1983 data are compared to 1979. Davis faults Vedder and Gallaway for considering the income of "millionaires," noting that this group accounted for only 0.01 percent of 1983 returns. Davis also notes that other factors such as economic changes and tax shelter activity should be taken into account when considering the changing tax burden. Finally, Davis points out that the share of after-tax income received by upper-income taxpayers increased from 1981 to 1983.

June 10, 1985 Richard Vedder and Lowell Gallaway, "Income Shares and the Supply Side: A Reply," *Tax Notes*.

Vedder and Gallaway respond to the Davis article and argue that the choice of 1981 as the base year is proper because ERTA was enacted in that year. They also note that the tax share of the top percentile of returns increased after 1981 no matter which base year is used and despite the fact that conventional wisdom says that it should fall following tax cuts like those in ERTA.

October 1985 Lawrence B. Lindsey, "Taxpayer Behavior and the Distribution of the 1982 Tax Cut" (Cambridge, Mass: National Bureau of Economic Research), Working Paper No. 1760.

Lindsey finds a significant behavioral response to the rate reductions of 1982. On average, about half of the revenue that would have been lost due to the rate reductions was recouped. Furthermore, the data suggest that for top-bracket taxpayers (the top 0.18 percent of tax returns) an actual increase in revenue occurred.

COMPARISON OF METHODOLOGY

Of all the studies of the distributional effects of ERTA, the methodology employed in Lawrence B. Lindsey's "Taxpayer Behavior and the Distribution of the 1982 Tax Cut" is most similar to the methodology used in this paper: both compare a static baseline to actual tax payments in order to evaluate the effects of ERTA on the level and distribution of tax payments. A few of the methodological differences between the two studies are described below.

Income Classification

Lindsey classifies taxpayers by adjusted gross income (AGI), though modified to retain a constant definition of AGI between years. In this paper, taxpayers are classified by expanded adjusted gross income (EAGI), which is a more comprehensive measure of income. (See Appendix B for the definition of EAGI).

Another important difference between the studies is the number of income groups into which the taxpayers are divided. Lindsey presents results for 14 groups, including three subdivisions of the top 5 percent of returns. The CBO study uses five income groupings, with the smallest group composed of the top percentile of returns. Lindsey observes different behavior for taxpayers in the top 0.18 percent of returns than for all other groups--only for this top group does he conclude that a behavioral response more than offsets the static effects of tax rate reductions in ERTA. CBO did not find that behavioral responses were larger than the static effects of the tax cuts, but this conclusion does not necessarily contradict Lindsey's results because the CBO did not investigate the behavior of taxpayers in groups smaller than the top percentile. The top percentile of returns includes taxpayers with a wide range of incomes who received different reductions in marginal and average tax rates as a result of ERTA. One would expect, therefore, that behavioral responses of taxpayers within this group would vary with income as Lindsey observes. As income groupings become smaller, however, the data become less reliable as the basis for drawing general conclusions about taxpayer behavior.

Creation of the Static Baseline

Though both papers develop a static baseline, they do so with different assumptions that affect both the level and distribution of baseline income and tax payments. The static baselines reflect assumptions about both the functional distribution of income (the distribution among types of income such as wages and salaries, dividends, rental income, etc.) and the distribution of income among income groups. Changes in the functional distribution cause changes in the distribution among taxpayers, since the distributions of each type of income among taxpayers differ (for example, dividends are more concentrated in upper-income groups than wage and salary income).

The Lindsey baseline reflects the effects of changes in the functional distribution of income on the distribution of income among taxpayers. This means that these effects are not attributed to tax changes in ERTA. In contrast, the CBO baseline holds both the functional and income-group distributions constant. This allows for the possibility that all distributional changes are induced by tax law changes in ERTA.

The baselines are created from the actual distribution of income in different years. Lindsey's baseline is developed from data in the 1979 *Statistics of Income*, which are aged to simulate the distribution of tax payments that would have occurred in 1982 if the 1982 tax cuts had not been enacted; the CBO baseline is developed from the distribution in 1980 and compared to the actual distribution in 1983.

To age the 1979 data to the 1982 baseline level, Lindsey uses the growth of different types of income as observed in nontax data sources, in this way adjusting the baseline for changes in the functional distribution of income between those years. In most cases, growth rates used are from the national income and product accounts (NIPA). Capital gains are not included in the NIPA definition of income; for capital gains, Lindsey substitutes actual 1980 capital gains realizations for realizations in 1979. This substitution is made under the assumption that 1979 capital gains realizations were higher than normal because of a temporary "unlocking" of gains in response to the reduction in the capital gains tax rate included in the Revenue Act of 1978. Lindsey argues that use of 1979 gains would make differences between the baseline and actual data artificially small--any behavioral response to the reduced rate on gains in ERTA would be understated.

Lindsey then indexes the 1980 gains to reflect changes in the price level. In comparison, the CBO baseline reflects 1980 capital gains grown at the rate of growth of nominal per capita personal income. Because nominal per capita personal income grew more rapidly than the price level between 1980 and 1983, the CBO baseline capital gains realizations will be closer to the actual value of capital gains than the Lindsey baseline amount of capital gains, that is, the behavioral response estimated using the CBO methodology would be smaller than that estimated using the Lindsey methodology (other things equal).

The Lindsey baseline reflects the assumption that each component of income (except for capital gain) would have grown as it actually did even if ERTA had not been passed. Capital gains in the baseline are increased by the growth rate of the CPI after 1980. The CBO baseline instead assumes that all income items (including capital gains) would have grown by the rate of growth of per capita personal income between 1980 and 1983, 21.9 percent, adjusted for 2.6 percent growth in the number of tax returns. This method embodies the as-

sumption that aggregate income would have grown as it did in the absence of ERTA. In other words, the assumption is that tax policy changes did not alter overall growth. This method of constructing the baseline leaves open the possibility that tax law changes affected the functional and income-group distributions of income as well as the ratio between the tax base and per capita personal income.

Table A.1 compares the growth rates between 1980 and 1983 of selected components of income per return, as would be used in the Lindsey methodology, to the growth of per capita personal income, used in this paper. Though the growth rates for many of the types of income differ considerably from the growth in per capita personal income, these items are a small share of total personal income. The largest component of income, wages and salaries, has a per-return growth rate that is fairly close to the growth rate of per capita personal income.

Bracket Creep

Lindsey applies pre-ERTA law to the baseline distribution of income to obtain the baseline level and distribution of tax payments. It appears, however, that he does not adjust the parameters of pre-ERTA law (for example, the personal exemption amount and tax bracket boundaries) for either nominal or real income growth. In this paper, 1980 tax law is indexed for nominal growth in per capita personal income in order to control for the effects of "bracket creep" on the level and distribution of tax payments. The baseline in this paper then holds average tax rates and income shares fixed at 1980 levels and assumes that income and deduction items per return would have grown at the same rate as per-capita personal income if tax policy had remained unchanged. Because his baseline is not indexed (other things equal), the level of Lindsey's baseline tax payments would be higher relative to actual tax payments than the CBO baseline level and his estimate of the static tax reduction greater. Further, with no indexation, the tax cut for lower-income taxpayers will appear relatively larger because the erosion in the value of the personal exemption and zero bracket amount has a larger relative effect on the tax payments of low-income taxpayers than on upper-income taxpayers.

Stacking Order of Static and Feedback Effects

In evaluating the effects of ERTA on taxes paid, both papers show the static effects of tax changes separately from the behavioral responses (or "feedback") to changes in the tax law. The papers differ, however, in the order of computation of static and feedback effects. Consider four distributions of taxes paid:

TABLE A.1. RATES OF GROWTH OF COMPONENTS OF INCOME, FROM NATIONAL INCOME AND PRODUCT ACCOUNTS

	1980	1983	Share of Personal In- come in 1983 (percents)	Growth (percents)	Growth per Return (percents)
Personal Income (In billions of dollars)	2,258.5	2,836.4		25.6	
Population (In thousands)	227,738	234,538		3.0	
Personal Income Per Capita (In dollars)	9,917	12,093		21.9	
Number of Tax Returns	93,902,469	96,321,310		2.6	
Consumer Price Index (1967 = 100)	246.8	298.4		20.9	

(In Billions of Dollars)					
Wages and Salaries	1,372.0	1,675.8	59.1		19.1
Proprietors' Income					
Farm	20.5	14.3	0.5		-32.0
Nonfarm	160.1	178.0	6.3		8.4
Personal Interest	271.9	385.7	13.6		38.3
Personal Dividends	52.9	68.0	2.4		25.3
Rental Income	6.6	12.8	0.5		89.1

SOURCE: Economic Report of the President (February 1986).

(1) the baseline distribution, which shows taxes paid when pre-ERTA law is applied to a pre-ERTA distribution of income that has been grown to post-ERTA levels.

(2) the distribution of taxes paid when post-ERTA law is applied to the pre-ERTA distribution of income,

- (3) the distribution when pre-ERTA law is applied to the post-ERTA distribution of income, and
- (4) the actual post-ERTA distribution of taxes paid (post-ERTA law applied to the post-ERTA distribution of income.)

Both papers seek to explain the differences between distributions number (1) and (4) as the sum of static effects and feedback effects. Lindsey defines the static effects of the tax changes as the differences between distributions number (1) and (2), and the feedback effects as the differences between distributions number (2) and (4). CBO defines the static effects as the differences between distributions number (1) and (3), and the feedback effects as the differences between distributions number (3) and (4). Compared to the Lindsey methodology if it were applied to the CBO data, the CBO methodology would show a larger static tax cut and, therefore, a larger offsetting tax increase from feedback effects; also, the CBO feedback effects would offset a larger proportion of the static tax cut. This occurs because CBO's feedback effects are computed at the higher pre-ERTA rates, while Lindsey computes feedback at the lower post-ERTA rates.

Stacking Order of Static Tax Changes

Both papers decompose the static effects of ERTA into those resulting from changes in the definition of the tax base and those resulting from changes in tax rates. However, the papers differ in the order in which these different effects are computed. Lindsey computes the effects of changes in the tax base first, computing them relative to pre-ERTA tax rates. Next, the effects of changes in rates are computed relative to the post-ERTA definition of the tax base. In this paper, the effects of rate changes are computed first, relative to the pre-ERTA tax base, and the effects of changes in the tax base are then computed relative to the reduced tax rates. This difference in methodology does not itself affect the estimate of the total static tax changes, but only the attribution of the effects of tax law changes to tax-base changes or rate changes. Compared to the CBO methodology (other things equal) the Lindsey methodology would attribute more of the total static effect to tax-base effects and less to tax-rate effects.

Interpretation of Results

CBO and Lindsey differ somewhat in the way they interpret differences between actual and baseline distributions of tax payments. Lindsey gives a stronger interpretation than does CBO; he attributes these differences to behavioral responses to ERTA. CBO also uses these differences as its measure of behavioral responses, but emphasizes that the distribution of income may have changed for reasons other than induced behavioral responses to changes in the tax law.

These other influences on the distribution include changes in economic conditions such as inflation, interest rates, and unemployment, changes in certain compliance provisions of the tax law, and deregulation of financial markets. CBO then applies available econometric evidence on behavioral responses to assess the likelihood that the differences are, in fact, attributable to behavioral responses (CBO's assessment of the evidence on behavioral responses to ERTA is presented in Chapter IV).

